

# SEQUENCE LISTING

<110> Procter & Gamble Company  
Evdokimov, Artem G  
Pokross, Matthew E

<120> Three Dimensional Coordinates of HPTPbeta

<130> 9045M2

<140> Not yet assigned

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<160> 15

<170> PatentIn version 3.2

<210> 1

<211> 6075

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (31)..(6024)

<400> 1

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ggc acc aag gat gac	1785	ttc tgg aaa atg gtg	1790	tgg gaa caa aac gtt	1795	5415
Gly Thr Lys Asp Asp		Phe Trp Lys Met Val		Trp Glu Gln Asn Val		
cac aac atc gtc atg	1800	gtg acc cag tgt gtt	1805	gag aag ggc cga gta	1810	5460
His Asn Ile Val Met		Val Thr Gln Cys Val		Glu Lys Gly Arg Val		
aag tgt gac cat tac	1815	tgg cca gcg gac cag	1820	gat tcc ctc tac tat	1825	5505
Lys Cys Asp His Tyr		Trp Pro Ala Asp Gln		Asp Ser Leu Tyr Tyr		
ggg gac ctc atc ctg	1830	cag atg ctc tca gag	1835	tcc gtc ctg cct gag	1840	5550
Gly Asp Leu Ile Leu		Gln Met Leu Ser Glu		Ser Val Leu Pro Glu		
tgg acc atc cgg gag	1845	ttt aag ata tgc ggt	1850	gag gaa cag ctt gat	1855	5595
Trp Thr Ile Arg Glu		Phe Lys Ile Cys Gly		Glu Glu Gln Leu Asp		
gca cac aga ctc atc	1860	cgc cac ttt cac tat	1865	acg gtg tgg cca gac	1870	5640
Ala His Arg Leu Ile		Arg His Phe His Tyr		Thr Val Trp Pro Asp		
cat gga gtc cca gaa	1875	acc acc cag tct ctg	1880	atc cag ttt gtg aga	1885	5685
His Gly Val Pro Glu		Thr Thr Gln Ser Leu		Ile Gln Phe Val Arg		
act gtc agg gac tac	1890	atc aac aga agc ccg	1895	ggt gct ggg ccc act	1900	5730
Thr Val Arg Asp Tyr		Ile Asn Arg Ser Pro		Gly Ala Gly Pro Thr		
gtg gtg cac tgc agt	1905	gct ggt gtg ggt agg	1910	act gga acc ttt att	1915	5775
Val Val His Cys Ser		Ala Gly Val Gly Arg		Thr Gly Thr Phe Ile		
gca ttg gac cga atc	1920	ctc cag cag tta gac	1925	tcc aaa gac tct gtg	1930	5820
Ala Leu Asp Arg Ile		Leu Gln Gln Leu Asp		Ser Lys Asp Ser Val		
gac att tat gga gca	1935	gtg cac gac cta aga	1940	ctt cac agg gtt cac	1945	5865
Asp Ile Tyr Gly Ala		Val His Asp Leu Arg		Leu His Arg Val His		
atg gtc cag act gag	1950	tgt cag tat gtc tac	1955	cta cat cag tgt gta	1960	5910
Met Val Gln Thr Glu		Cys Gln Tyr Val Tyr		Leu His Gln Cys Val		
aga gat gtc ctc aga	1965	gca aga aag cta cgg	1970	agt gaa caa gaa aac	1975	5955
Arg Asp Val Leu Arg		Ala Arg Lys Leu Arg		Ser Glu Gln Glu Asn		
ccc ttg ttt cca atc	1980	tat gaa aat gtg aat	1985	cca gag tat cac aga	1990	6000
Pro Leu Phe Pro Ile		Tyr Glu Asn Val Asn		Pro Glu Tyr His Arg		
gat cca gtc tat tca		agg cat tga gaatgtacct		gaagagctcc tggataaaaa		6054
Asp Pro Val Tyr Ser		Arg His				

1995

ttattcactg tgtgatttgt t

6075

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Glu Ser Lys Ala Ser Ser His Ser Val Ser Ile Gln Trp Arg Ile Leu  
35 40 45

Gly Ser Pro Cys Asn Phe Ser Leu Ile Tyr Ser Ser Asp Thr Leu Gly  
50 55 60

Ala Ala Leu Cys Pro Thr Phe Arg Ile Asp Asn Thr Thr Tyr Gly Cys  
65 70 75 80

Asn Leu Gln Asp Leu Gln Ala Gly Thr Ile Tyr Asn Phe Lys Ile Ile  
85 90 95

Ser Leu Asp Glu Glu Arg Thr Val Val Leu Gln Thr Asp Pro Leu Pro  
100 105 110

Pro Ala Arg Phe Gly Val Ser Lys Glu Lys Thr Thr Ser Thr Gly Leu  
115 120 125

His Val Trp Trp Thr Pro Ser Ser Gly Lys Val Thr Ser Tyr Glu Val  
130 135 140

Gln Leu Phe Asp Glu Asn Asn Gln Lys Ile Gln Gly Val Gln Ile Gln  
145 150 155 160

Glu Ser Thr Ser Trp Asn Glu Tyr Thr Phe Phe Asn Leu Thr Ala Gly  
165 170 175

Ser Lys Tyr Asn Ile Ala Ile Thr Ala Val Ser Gly Gly Lys Arg Ser  
180 185 190

Phe Ser Val Tyr Thr Asn Gly Ser Thr Val Pro Ser Pro Val Lys Asp

195					200					205					
Ile	Gly	Ile	Ser	Thr	Lys	Ala	Asn	Ser	Leu	Leu	Ile	Ser	Trp	Ser	His
210						215					220				
Gly	Ser	Gly	Asn	Val	Glu	Arg	Tyr	Arg	Leu	Met	Leu	Met	Asp	Lys	Gly
225					230					235					240
Ile	Leu	Val	His	Gly	Gly	Val	Val	Asp	Lys	His	Ala	Thr	Ser	Tyr	Ala
				245					250					255	
Phe	His	Gly	Leu	Ser	Pro	Gly	Tyr	Leu	Tyr	Asn	Leu	Thr	Val	Met	Thr
			260					265					270		
Glu	Ala	Ala	Gly	Leu	Gln	Asn	Tyr	Arg	Trp	Lys	Leu	Val	Arg	Thr	Ala
		275					280					285			
Pro	Met	Glu	Val	Ser	Asn	Leu	Lys	Val	Thr	Asn	Asp	Gly	Ser	Leu	Thr
	290					295					300				
Ser	Leu	Lys	Val	Lys	Trp	Gln	Arg	Pro	Pro	Gly	Asn	Val	Asp	Ser	Tyr
305					310					315					320
Asn	Ile	Thr	Leu	Ser	His	Lys	Gly	Thr	Ile	Lys	Glu	Ser	Arg	Val	Leu
				325					330					335	
Ala	Pro	Trp	Ile	Thr	Glu	Thr	His	Phe	Lys	Glu	Leu	Val	Pro	Gly	Arg
			340					345					350		
Leu	Tyr	Gln	Val	Thr	Val	Ser	Cys	Val	Ser	Gly	Glu	Leu	Ser	Ala	Gln
		355					360					365			
Lys	Met	Ala	Val	Gly	Arg	Thr	Phe	Pro	Asp	Lys	Val	Ala	Asn	Leu	Glu
	370					375					380				
Ala	Asn	Asn	Asn	Gly	Arg	Met	Arg	Ser	Leu	Val	Val	Ser	Trp	Ser	Pro
385					390					395					400
Pro	Ala	Gly	Asp	Trp	Glu	Gln	Tyr	Arg	Ile	Leu	Leu	Phe	Asn	Asp	Ser
				405					410					415	
Val	Val	Leu	Leu	Asn	Ile	Thr	Val	Gly	Lys	Glu	Glu	Thr	Gln	Tyr	Val
			420					425					430		
Met	Asp	Asp	Thr	Gly	Leu	Val	Pro	Gly	Arg	Gln	Tyr	Glu	Val	Glu	Val
		435					440					445			

Ile Val Glu Ser Gly Asn Leu Lys Asn Ser Glu Arg Cys Gln Gly Arg  
450 455 460

Thr Val Pro Leu Ala Val Leu Gln Leu Arg Val Lys His Ala Asn Glu  
465 470 475 480

Thr Ser Leu Ser Ile Met Trp Gln Thr Pro Val Ala Glu Trp Glu Lys  
485 490 495

Tyr Ile Ile Ser Leu Ala Asp Arg Asp Leu Leu Leu Ile His Lys Ser  
500 505 510

Leu Ser Lys Asp Ala Lys Glu Phe Thr Phe Thr Asp Leu Val Pro Gly  
515 520 525

Arg Lys Tyr Met Ala Thr Val Thr Ser Ile Ser Gly Asp Leu Lys Asn  
530 535 540

Ser Ser Ser Val Lys Gly Arg Thr Val Pro Ala Gln Val Thr Asp Leu  
545 550 555 560

His Val Ala Asn Gln Gly Met Thr Ser Ser Leu Phe Thr Asn Trp Thr  
565 570 575

Gln Ala Gln Gly Asp Val Glu Phe Tyr Gln Val Leu Leu Ile His Glu  
580 585 590

Asn Val Val Ile Lys Asn Glu Ser Ile Ser Ser Glu Thr Ser Arg Tyr  
595 600 605

Ser Phe His Ser Leu Lys Ser Gly Ser Leu Tyr Ser Val Val Val Thr  
610 615 620

Thr Val Ser Gly Gly Ile Ser Ser Arg Gln Val Val Val Glu Gly Arg  
625 630 635 640

Thr Val Pro Ser Ser Val Ser Gly Val Thr Val Asn Asn Ser Gly Arg  
645 650 655

Asn Asp Tyr Leu Ser Val Ser Trp Leu Val Ala Pro Gly Asp Val Asp  
660 665 670

Asn Tyr Glu Val Thr Leu Ser His Asp Gly Lys Val Val Gln Ser Leu  
675 680 685

Val Ile Ala Lys Ser Val Arg Glu Cys Ser Phe Ser Ser Leu Thr Pro  
690 695 700

Gly Arg Leu Tyr Thr Val Thr Ile Thr Thr Arg Ser Gly Lys Tyr Glu  
705 710 715 720

Asn His Ser Phe Ser Gln Glu Arg Thr Val Pro Asp Lys Val Gln Gly  
725 730 735

Val Ser Val Ser Asn Ser Ala Arg Ser Asp Tyr Leu Arg Val Ser Trp  
740 745 750

Val His Ala Thr Gly Asp Phe Asp His Tyr Glu Val Thr Ile Lys Asn  
755 760 765

Lys Asn Asn Phe Ile Gln Thr Lys Ser Ile Pro Lys Ser Glu Asn Glu  
770 775 780

Cys Val Phe Val Gln Leu Val Pro Gly Arg Leu Tyr Ser Val Thr Val  
785 790 795 800

Thr Thr Lys Ser Gly Gln Tyr Glu Ala Asn Glu Gln Gly Asn Gly Arg  
805 810 815

Thr Ile Pro Glu Pro Val Lys Asp Leu Thr Leu Arg Asn Arg Ser Thr  
820 825 830

Glu Asp Leu His Val Thr Trp Ser Gly Ala Asn Gly Asp Val Asp Gln  
835 840 845

Tyr Glu Ile Gln Leu Leu Phe Asn Asp Met Lys Val Phe Pro Pro Phe  
850 855 860

His Leu Val Asn Thr Ala Thr Glu Tyr Arg Phe Thr Ser Leu Thr Pro  
865 870 875 880

Gly Arg Gln Tyr Lys Ile Leu Val Leu Thr Ile Ser Gly Asp Val Gln  
885 890 895

Gln Ser Ala Phe Ile Glu Gly Phe Thr Val Pro Ser Ala Val Lys Asn  
900 905 910

Ile His Ile Ser Pro Asn Gly Ala Thr Asp Ser Leu Thr Val Asn Trp  
915 920 925

Thr Pro Gly Gly Gly Asp Val Asp Ser Tyr Thr Val Ser Ala Phe Arg  
 930 935 940

His Ser Gln Lys Val Asp Ser Gln Thr Ile Pro Lys His Val Phe Glu  
 945 950 955 960

His Thr Phe His Arg Leu Glu Ala Gly Glu Gln Tyr Gln Ile Met Ile  
 965 970 975

Ala Ser Val Ser Gly Ser Leu Lys Asn Gln Ile Asn Val Val Gly Arg  
 980 985 990

Thr Val Pro Ala Ser Val Gln Gly Val Ile Ala Asp Asn Ala Tyr Ser  
 995 1000 1005

Ser Tyr Ser Leu Ile Val Ser Trp Gln Lys Ala Ala Gly Val Ala  
 1010 1015 1020

Glu Arg Tyr Asp Ile Leu Leu Leu Thr Glu Asn Gly Ile Leu Leu  
 1025 1030 1035

Arg Asn Thr Ser Glu Pro Ala Thr Thr Lys Gln His Lys Phe Glu  
 1040 1045 1050

Asp Leu Thr Pro Gly Lys Lys Tyr Lys Ile Gln Ile Leu Thr Val  
 1055 1060 1065

Ser Gly Gly Leu Phe Ser Lys Glu Ala Gln Thr Glu Gly Arg Thr  
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Val Pro Ala Ala Val Thr Asp Leu Arg Ile Thr Glu Asn Ser Thr  
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Arg His Leu Ser Phe Arg Trp Thr Ala Ser Glu Gly Glu Leu Ser  
 1100 1105 1110

Trp Tyr Asn Ile Phe Leu Tyr Asn Pro Asp Gly Asn Leu Gln Glu  
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Arg Ala Gln Val Asp Pro Leu Val Gln Ser Phe Ser Phe Gln Asn  
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Leu Leu Gln Gly Arg Met Tyr Lys Met Val Ile Val Thr His Ser  
 1145 1150 1155

Gly Glu Leu Ser Asn Glu Ser Phe Ile Phe Gly Arg Thr Val Pro

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Ala Ser Val Ser His Leu Arg Gly Ser Asn Arg Asn Thr Thr Asp				
1175		1180		1185
Ser Leu Trp Phe Asn Trp Ser Pro Ala Ser Gly Asp Phe Asp Phe				
1190		1195		1200
Tyr Glu Leu Ile Leu Tyr Asn Pro Asn Gly Thr Lys Lys Glu Asn				
1205		1210		1215
Trp Lys Asp Lys Asp Leu Thr Glu Trp Arg Phe Gln Gly Leu Val				
1220		1225		1230
Pro Gly Arg Lys Tyr Val Leu Trp Val Val Thr His Ser Gly Asp				
1235		1240		1245
Leu Ser Asn Lys Val Thr Ala Glu Ser Arg Thr Ala Pro Ser Pro				
1250		1255		1260
Pro Ser Leu Met Ser Phe Ala Asp Ile Ala Asn Thr Ser Leu Ala				
1265		1270		1275
Ile Thr Trp Lys Gly Pro Pro Asp Trp Thr Asp Tyr Asn Asp Phe				
1280		1285		1290
Glu Leu Gln Trp Leu Pro Arg Asp Ala Leu Thr Val Phe Asn Pro				
1295		1300		1305
Tyr Asn Asn Arg Lys Ser Glu Gly Arg Ile Val Tyr Gly Leu Arg				
1310		1315		1320
Pro Gly Arg Ser Tyr Gln Phe Asn Val Lys Thr Val Ser Gly Asp				
1325		1330		1335
Ser Trp Lys Thr Tyr Ser Lys Pro Ile Phe Gly Ser Val Arg Thr				
1340		1345		1350
Lys Pro Asp Lys Ile Gln Asn Leu His Cys Arg Pro Gln Asn Ser				
1355		1360		1365
Thr Ala Ile Ala Cys Ser Trp Ile Pro Pro Asp Ser Asp Phe Asp				
1370		1375		1380
Gly Tyr Ser Ile Glu Cys Arg Lys Met Asp Thr Gln Glu Val Glu				
1385		1390		1395

Phe	Ser	Arg	Lys	Leu	Glu	Lys	Glu	Lys	Ser	Leu	Leu	Asn	Ile	Met
1400						1405					1410			
Met	Leu	Val	Pro	His	Lys	Arg	Tyr	Leu	Val	Ser	Ile	Lys	Val	Gln
1415						1420					1425			
Ser	Ala	Gly	Met	Thr	Ser	Glu	Val	Val	Glu	Asp	Ser	Thr	Ile	Thr
1430						1435					1440			
Met	Ile	Asp	Arg	Pro	Pro	Pro	Pro	Pro	Pro	His	Ile	Arg	Val	Asn
1445						1450					1455			
Glu	Lys	Asp	Val	Leu	Ile	Ser	Lys	Ser	Ser	Ile	Asn	Phe	Thr	Val
1460						1465					1470			
Asn	Cys	Ser	Trp	Phe	Ser	Asp	Thr	Asn	Gly	Ala	Val	Lys	Tyr	Phe
1475						1480					1485			
Thr	Val	Val	Val	Arg	Glu	Ala	Asp	Gly	Ser	Asp	Glu	Leu	Lys	Pro
1490						1495					1500			
Glu	Gln	Gln	His	Pro	Leu	Pro	Ser	Tyr	Leu	Glu	Tyr	Arg	His	Asn
1505						1510					1515			
Ala	Ser	Ile	Arg	Val	Tyr	Gln	Thr	Asn	Tyr	Phe	Ala	Ser	Lys	Cys
1520						1525					1530			
Ala	Glu	Asn	Pro	Asn	Ser	Asn	Ser	Lys	Ser	Phe	Asn	Ile	Lys	Leu
1535						1540					1545			
Gly	Ala	Glu	Met	Glu	Ser	Leu	Gly	Gly	Lys	Arg	Asp	Pro	Thr	Gln
1550						1555					1560			
Gln	Lys	Phe	Cys	Asp	Gly	Pro	Leu	Lys	Pro	His	Thr	Ala	Tyr	Arg
1565						1570					1575			
Ile	Ser	Ile	Arg	Ala	Phe	Thr	Gln	Leu	Phe	Asp	Glu	Asp	Leu	Lys
1580						1585					1590			
Glu	Phe	Thr	Lys	Pro	Leu	Tyr	Ser	Asp	Thr	Phe	Phe	Ser	Leu	Pro
1595						1600					1605			
Ile	Thr	Thr	Glu	Ser	Glu	Pro	Leu	Phe	Gly	Ala	Ile	Glu	Gly	Val
1610						1615					1620			



Ser	Ala	Gly	Leu	Phe	Leu	Ile	Gly	Met	Leu	Val	Ala	Val	Val	Ala
1625						1630					1635			
Leu	Leu	Ile	Cys	Arg	Gln	Lys	Val	Ser	His	Gly	Arg	Glu	Arg	Pro
1640						1645					1650			
Ser	Ala	Arg	Leu	Ser	Ile	Arg	Arg	Asp	Arg	Pro	Leu	Ser	Val	His
1655						1660					1665			
Leu	Asn	Leu	Gly	Gln	Lys	Gly	Asn	Arg	Lys	Thr	Ser	Cys	Pro	Ile
1670						1675					1680			
Lys	Ile	Asn	Gln	Phe	Glu	Gly	His	Phe	Met	Lys	Leu	Gln	Ala	Asp
1685						1690					1695			
Ser	Asn	Tyr	Leu	Leu	Ser	Lys	Glu	Tyr	Glu	Glu	Leu	Lys	Asp	Val
1700						1705					1710			
Gly	Arg	Asn	Gln	Ser	Cys	Asp	Ile	Ala	Leu	Leu	Pro	Glu	Asn	Arg
1715						1720					1725			
Gly	Lys	Asn	Arg	Tyr	Asn	Asn	Ile	Leu	Pro	Tyr	Asp	Ala	Thr	Arg
1730						1735					1740			
Val	Lys	Leu	Ser	Asn	Val	Asp	Asp	Asp	Pro	Cys	Ser	Asp	Tyr	Ile
1745						1750					1755			
Asn	Ala	Ser	Tyr	Ile	Pro	Gly	Asn	Asn	Phe	Arg	Arg	Glu	Tyr	Ile
1760						1765					1770			
Val	Thr	Gln	Gly	Pro	Leu	Pro	Gly	Thr	Lys	Asp	Asp	Phe	Trp	Lys
1775						1780					1785			
Met	Val	Trp	Glu	Gln	Asn	Val	His	Asn	Ile	Val	Met	Val	Thr	Gln
1790						1795					1800			
Cys	Val	Glu	Lys	Gly	Arg	Val	Lys	Cys	Asp	His	Tyr	Trp	Pro	Ala
1805						1810					1815			
Asp	Gln	Asp	Ser	Leu	Tyr	Tyr	Gly	Asp	Leu	Ile	Leu	Gln	Met	Leu
1820						1825					1830			
Ser	Glu	Ser	Val	Leu	Pro	Glu	Trp	Thr	Ile	Arg	Glu	Phe	Lys	Ile
1835						1840					1845			

Cys Gly Glu Glu Gln Leu Asp Ala His Arg Leu Ile Arg His Phe  
1850 1855 1860

His Tyr Thr Val Trp Pro Asp His Gly Val Pro Glu Thr Thr Gln  
1865 1870 1875

Ser Leu Ile Gln Phe Val Arg Thr Val Arg Asp Tyr Ile Asn Arg  
1880 1885 1890

Ser Pro Gly Ala Gly Pro Thr Val Val His Cys Ser Ala Gly Val  
1895 1900 1905

Gly Arg Thr Gly Thr Phe Ile Ala Leu Asp Arg Ile Leu Gln Gln  
1910 1915 1920

Leu Asp Ser Lys Asp Ser Val Asp Ile Tyr Gly Ala Val His Asp  
1925 1930 1935

Leu Arg Leu His Arg Val His Met Val Gln Thr Glu Cys Gln Tyr  
1940 1945 1950

Val Tyr Leu His Gln Cys Val Arg Asp Val Leu Arg Ala Arg Lys  
1955 1960 1965

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aaa act tct tgt cca ata aaa ata aat cag ttt gaa ggg cat ttc atg 96  
Lys Thr Ser Cys Pro Ile Lys Ile Asn Gln Phe Glu Gly His Phe Met  
20 25 30

aag cta cag gct gac tcc aac tac ctt cta tcc aag gaa tac gag gag 144  
Lys Leu Gln Ala Asp Ser Asn Tyr Leu Leu Ser Lys Glu Tyr Glu Glu

35	40	45	
tta aaa gac gtg ggc cga aac cag tca tgt gac att gca ctc ttg ccg Leu Lys Asp Val Gly Arg Asn Gln Ser Cys Asp Ile Ala Leu Leu Pro 50 55 60			192
gag aat aga ggg aaa aat cga tac aac aat ata ttg ccc tat gat gcc Glu Asn Arg Gly Lys Asn Arg Tyr Asn Asn Ile Leu Pro Tyr Asp Ala 65 70 75 80			240
acg cga gtg aag ctc tcc aat gta gat gat gat cct tgc tct gac tac Thr Arg Val Lys Leu Ser Asn Val Asp Asp Asp Pro Cys Ser Asp Tyr 85 90 95			288
atc aat gcc agc tac atc cct ggc aac aac ttc aga aga gaa tac att Ile Asn Ala Ser Tyr Ile Pro Gly Asn Asn Phe Arg Arg Glu Tyr Ile 100 105 110			336
gtc act cag gga ccg ctt cct ggc acc aag gat gac ttc tgg aaa atg Val Thr Gln Gly Pro Leu Pro Gly Thr Lys Asp Asp Phe Trp Lys Met 115 120 125			384
gtg tgg gaa caa aac gtt cac aac atc gtc atg gtg acc cag tgt gtt Val Trp Glu Gln Asn Val His Asn Ile Val Met Val Thr Gln Cys Val 130 135 140			432
gag aag ggc cga gta aag tgt gac cat tac tgg cca gcg gac cag gat Glu Lys Gly Arg Val Lys Cys Asp His Tyr Trp Pro Ala Asp Gln Asp 145 150 155 160			480
tcc ctc tac tat ggg gac ctc atc ctg cag atg ctc tca gag tcc gtc Ser Leu Tyr Tyr Gly Asp Leu Ile Leu Gln Met Leu Ser Glu Ser Val 165 170 175			528
ctg cct gag tgg acc atc cgg gag ttt aag ata tgc ggt gag gaa cag Leu Pro Glu Trp Thr Ile Arg Glu Phe Lys Ile Cys Gly Glu Glu Gln 180 185 190			576
ctt gat gca cac aga ctc atc cgc cac ttt cac tat acg gtg tgg cca Leu Asp Ala His Arg Leu Ile Arg His Phe His Tyr Thr Val Trp Pro 195 200 205			624
gac cat gga gtc cca gaa acc acc cag tct ctg atc cag ttt gtg aga Asp His Gly Val Pro Glu Thr Thr Gln Ser Leu Ile Gln Phe Val Arg 210 215 220			672
act gtc agg gac tac atc aac aga agc ccg ggt gct ggg ccc act gtg Thr Val Arg Asp Tyr Ile Asn Arg Ser Pro Gly Ala Gly Pro Thr Val 225 230 235 240			720
gtg cac tgc agt gct ggt gtg ggt agg act gga acc ttt att gca ttg Val His Cys Ser Ala Gly Val Gly Arg Thr Gly Thr Phe Ile Ala Leu 245 250 255			768
gac cga atc ctc cag cag tta gac tcc aaa gac tct gtg gac att tat Asp Arg Ile Leu Gln Gln Leu Asp Ser Lys Asp Ser Val Asp Ile Tyr 260 265 270			816
gga gca gtg cac gac cta aga ctt cac agg gtt cac atg gtc cag act Gly Ala Val His Asp Leu Arg Leu His Arg Val His Met Val Gln Thr 275 280 285			864

gag tgt cag tat gtc tac cta cat cag tgt gta aga gat gtc ctc aga 912  
 Glu Cys Gln Tyr Val Tyr Leu His Gln Cys Val Arg Asp Val Leu Arg  
 290 295 300

gca aga aag cta cgg agt gaa caa gaa aac ccc ttg ttt cca atc tat 960  
 Ala Arg Lys Leu Arg Ser Glu Gln Glu Asn Pro Leu Phe Pro Ile Tyr  
 305 310 315 320

gaa aat gtg aat cca gag tat cac aga gat cca gtc tat tca agg cat 1008  
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tga 1011

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Lys Leu Gln Ala Asp Ser Asn Tyr Leu Leu Ser Lys Glu Tyr Glu Glu  
 35 40 45

Leu Lys Asp Val Gly Arg Asn Gln Ser Cys Asp Ile Ala Leu Leu Pro  
 50 55 60

Glu Asn Arg Gly Lys Asn Arg Tyr Asn Asn Ile Leu Pro Tyr Asp Ala  
 65 70 75 80

Thr Arg Val Lys Leu Ser Asn Val Asp Asp Asp Pro Cys Ser Asp Tyr  
 85 90 95

Ile Asn Ala Ser Tyr Ile Pro Gly Asn Asn Phe Arg Arg Glu Tyr Ile  
 100 105 110

Val Thr Gln Gly Pro Leu Pro Gly Thr Lys Asp Asp Phe Trp Lys Met  
 115 120 125

Val Trp Glu Gln Asn Val His Asn Ile Val Met Val Thr Gln Cys Val  
 130 135 140

Glu Lys Gly Arg Val Lys Cys Asp His Tyr Trp Pro Ala Asp Gln Asp  
 145 150 155 160

Ser Leu Tyr Tyr Gly Asp Leu Ile Leu Gln Met Leu Ser Glu Ser Val  
165 170 175

Leu Pro Glu Trp Thr Ile Arg Glu Phe Lys Ile Cys Gly Glu Glu Gln  
180 185 190

Leu Asp Ala His Arg Leu Ile Arg His Phe His Tyr Thr Val Trp Pro  
195 200 205

Asp His Gly Val Pro Glu Thr Thr Gln Ser Leu Ile Gln Phe Val Arg  
210 215 220

Thr Val Arg Asp Tyr Ile Asn Arg Ser Pro Gly Ala Gly Pro Thr Val  
225 230 235 240

Val His Cys Ser Ala Gly Val Gly Arg Thr Gly Thr Phe Ile Ala Leu  
245 250 255

Asp Arg Ile Leu Gln Gln Leu Asp Ser Lys Asp Ser Val Asp Ile Tyr  
260 265 270

Gly Ala Val His Asp Leu Arg Leu His Arg Val His Met Val Gln Thr  
275 280 285

Glu Cys Gln Tyr Val Tyr Leu His Gln Cys Val Arg Asp Val Leu Arg  
290 295 300

Ala Arg Lys Leu Arg Ser Glu Gln Glu Asn Pro Leu Phe Pro Ile Tyr  
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1 5 10 15

48

aaa act tct tgt cca ata aaa ata aat cag ttt gaa ggg cat ttc atg Lys Thr Ser Cys 20 Pro Ile Lys Ile Asn Gln Phe Glu Gly His Phe Met 25 30	96
aag cta cag gct gac tcc aac tac ctt cta tcc aag gaa tac gag gag Lys Leu Gln Ala Asp Ser Asn Tyr Leu Leu Ser Lys Glu Tyr Glu Glu 35 40 45	144
tta aaa gac gtg ggc cga aac cag tca tgt gac att gca ctc ttg ccg Leu Lys Asp Val Gly Arg Asn Gln Ser Cys Asp Ile Ala Leu Leu Pro 50 55 60	192
gag aat aga ggg aaa aat cga tac aac aat ata ttg ccc tat gat gcc Glu Asn Arg Gly Lys Asn Arg Tyr Asn Asn Ile Leu Pro Tyr Asp Ala 65 70 75 80	240
acg cga gtg aag ctc tcc aat gta gat gat gat cct tgc tct gac tac Thr Arg Val Lys 85 Leu Ser Asn Val Asp Asp Asp Pro Cys Ser Asp Tyr 90 95	288
atc aat gcc agc tac atc cct ggc aac aac ttc aga aga gaa tac att Ile Asn Ala Ser Tyr 100 Ile Pro Gly Asn Asn Phe Arg Arg Glu Tyr Ile 105 110	336
gtc act cag gga ccg ctt cct ggc acc aag gat gac ttc tgg aaa atg Val Thr Gln Gly Pro Leu Pro Gly Thr Lys Asp Asp Phe Trp Lys Met 115 120 125	384
gtg tgg gaa caa aac gtt cac aac atc gtc atg gtg acc cag tgt gtt Val Trp Glu Gln Asn Val His Asn Ile Val Met Val Thr Gln Cys Val 130 135 140	432
gag aag ggc cga gta aag tgt gac cat tac tgg cca gcg gac cag gat Glu Lys Gly Arg Val Lys Cys Asp His Tyr Trp Pro Ala Asp Gln Asp 145 150 155 160	480
tcc ctc tac tat ggg gac ctc atc ctg cag atg ctc tca gag tcc gtc Ser Leu Tyr Tyr 165 Gly Asp Leu Ile Leu Gln Met Leu Ser Glu Ser Val 170 175	528
ctg cct gag tgg acc atc cgg gag ttt aag ata tgc ggt gag gaa cag Leu Pro Glu Trp Thr Ile Arg Glu Phe Lys Ile Cys Gly Glu Glu Gln 180 185 190	576
ctt gat gca cac aga ctc atc cgc cac ttt cac tat acg gtg tgg cca Leu Asp Ala His Arg Leu Ile Arg His Phe His Tyr Thr Val Trp Pro 195 200 205	624
gac cat gga gtc cca gaa acc acc cag tct ctg atc cag ttt gtg aga Asp His Gly Val Pro Glu Thr Thr Gln Ser Leu Ile Gln Phe Val Arg 210 215 220	672
act gtc agg gac tac atc aac aga agc ccg ggt gct ggg ccc act gtg Thr Val Arg Asp Tyr 225 Ile Asn Arg Ser Pro Gly Ala Gly Pro Thr Val 230 235 240	720
gtg cac tgc agt gct ggt gtg ggt agg act gga acc ttt att gca ttg Val His Cys Ser 245 Ala Gly Val Gly Arg Thr Gly Thr Phe Ile Ala Leu 250 255	768
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Asp Arg Ile Leu Gln Gln Leu Asp Ser Lys Asp Ser Val Asp Ile Tyr	
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gga gca gtg cac gac cta aga ctt cac agg gtt cac atg gtc cag act	864
Gly Ala Val His Asp Leu Arg Leu His Arg Val His Met Val Gln Thr	
275 280 285	
gag tgt cag tat gtc tac cta cat cag tgt gta aga gat gtc ctc aga	912
Glu Cys Gln Tyr Val Tyr Leu His Gln Cys Val Arg Asp Val Leu Arg	
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35 40 45	
Leu Lys Asp Val Gly Arg Asn Gln Ser Cys Asp Ile Ala Leu Leu Pro	
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Glu Asn Arg Gly Lys Asn Arg Tyr Asn Asn Ile Leu Pro Tyr Asp Ala	
65 70 75 80	
Thr Arg Val Lys Leu Ser Asn Val Asp Asp Asp Pro Cys Ser Asp Tyr	
85 90 95	
Ile Asn Ala Ser Tyr Ile Pro Gly Asn Asn Phe Arg Arg Glu Tyr Ile	
100 105 110	
Val Thr Gln Gly Pro Leu Pro Gly Thr Lys Asp Asp Phe Trp Lys Met	
115 120 125	
Val Trp Glu Gln Asn Val His Asn Ile Val Met Val Thr Gln Cys Val	
130 135 140	
Glu Lys Gly Arg Val Lys Cys Asp His Tyr Trp Pro Ala Asp Gln Asp	
145 150 155 160	

Ser Leu Tyr Tyr Gly Asp Leu Ile Leu Gln Met Leu Ser Glu Ser Val  
 165 170 175

Leu Pro Glu Trp Thr Ile Arg Glu Phe Lys Ile Cys Gly Glu Glu Gln  
 180 185 190

Leu Asp Ala His Arg Leu Ile Arg His Phe His Tyr Thr Val Trp Pro  
 195 200 205

Asp His Gly Val Pro Glu Thr Thr Gln Ser Leu Ile Gln Phe Val Arg  
 210 215 220

Thr Val Arg Asp Tyr Ile Asn Arg Ser Pro Gly Ala Gly Pro Thr Val  
 225 230 235 240

Val His Cys Ser Ala Gly Val Gly Arg Thr Gly Thr Phe Ile Ala Leu  
 245 250 255

Asp Arg Ile Leu Gln Gln Leu Asp Ser Lys Asp Ser Val Asp Ile Tyr  
 260 265 270

Gly Ala Val His Asp Leu Arg Leu His Arg Val His Met Val Gln Thr  
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Glu Cys Gln Tyr Val Tyr Leu His Gln Cys Val Arg Asp Val Leu Arg  
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Ala Arg Lys Leu Arg Ser Glu Gln  
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Met Lys Leu Gln Ala Asp Ser Asn Tyr Leu Leu Ser Lys Glu Tyr Glu  
 35 40 45



Glu Leu Lys Asp Val Gly Arg Asn Gln Ser Cys Asp Ile Ala Leu Leu  
 50 55 60

Pro Glu Asn Arg Gly Lys Asn Arg Tyr Asn Asn Ile Leu Pro Tyr Asp  
 65 70 75 80

Ala Thr Arg Val Lys Leu Ser Asn Val Asp Asp Asp Pro Cys Ser Asp  
 85 90 95

Tyr Ile Asn Ala Ser Tyr Ile Pro Gly Asn Asn Phe Arg Arg Glu Tyr  
 100 105 110

Ile Val Thr Gln Gly Pro Leu Pro Gly Thr Lys Asp Asp Phe Trp Lys  
 115 120 125

Met Val Trp Glu Gln Asn Val His Asn Ile Val Met Val Thr Gln Cys  
 130 135 140

Val Glu Lys Gly Arg Val Lys Cys Asp His Tyr Trp Pro Ala Asp Gln  
 145 150 155 160

Asp Ser Leu Tyr Tyr Gly Asp Leu Ile Leu Gln Met Leu Ser Glu Ser  
 165 170 175

Val Leu Pro Glu Trp Thr Ile Arg Glu Phe Lys Ile Cys Gly Glu Glu  
 180 185 190

Gln Leu Asp Ala His Arg Leu Ile Arg His Phe His Tyr Thr Val Trp  
 195 200 205

Pro Asp His Gly Val Pro Glu Thr Thr Gln Ser Leu Ile Gln Phe Val  
 210 215 220

Arg Thr Val Arg Asp Tyr Ile Asn Arg Ser Pro Gly Ala Gly Pro Thr  
 225 230 235 240

Val Val His Cys Ser Ala Gly Val Gly Arg Thr Gly Thr Phe Ile Ala  
 245 250 255

Leu Asp Arg Ile Leu Gln Gln Leu Asp Ser Lys Asp Ser Val Asp Ile  
 260 265 270

Tyr Gly Ala Val His Asp Leu Arg Leu His Arg Val His Met Val Gln  
 275 280 285

Thr Glu Cys Gln Tyr Val Tyr Leu His Gln Cys Val Arg Asp Val Leu

290

295

300

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